

REMARKS

Prior to consideration of the above-identified application, entry of the above claim amendments and consideration of the following remarks are respectfully requested. The amendments and remarks are in response to the Office Action of August 4, 2003, and the Advisory Action of October 28, 2003, in the parent case.

Claims 1-24, 26-34, and 43-51 are pending in the application. Claims 25 and 35-40 were canceled in the parent case. Claims 41 and 42 were not entered. New claims 44-49 correspond to cancelled claims 35-40, previously withdrawn and cancelled in view of a Restriction Requirement. New claims 43, 50, and 51 are supported by the specification and claims as originally filed. Claims 1, 2, 6, 18-20, 24, 27, and 29 are herein amended for clarity.

Claim 6 was rejected under 35 U.S.C. 112, second paragraph. The claim has been amended for clarity and proper antecedent basis. Withdrawal of the rejection is in order.

Claims 1-11, 15-24, 27-29, and 31-34 were rejected under 35 U.S.C. §103(a) over Walt et al. (WO 00/16101) in view of McGall et al (U.S. Patent No. 6,147,205). According to the Office Action, Walt et al. discloses a coating composition comprising a gelling agent and microspheres dispersed in a fluid, but does not disclose use of a coating aid. McGall et al. is cited for disclosure of a coating aid. Applicants traverse the rejection for at least the following reasons.

Walt et al. discloses adding microspheres in a polymeric solution to a substrate, wherein the solution is evaporated, leaving a polymer film holding the microspheres in place on the substrate (*see* p. 22, lines 10-16). The substrate contains discrete sites for association with the microspheres (*see* p 7, lines 21-26). Applicants attach hereto a rendered drawing of the coating of Walt et al., and refer the Examiner to figures 5A, 5B, 7A, and 7B of Walt et al., demonstrating the discrete sites on the substrate for association of the microspheres.

Walt et al. does not disclose or suggest use of a coating aid, or that the solution gels. In contrast, Walt et al. relies on evaporation to form a film, not a gel, to hold the microspheres. Walt et al. also does not disclose or suggest use of a substrate without predetermined and/or premarked microsphere attachment sites.

McGall et al. discloses compounds and methods for protecting chemical groups, and for forming compounds on an activated support. McGall et al. does not disclose or suggest gelation of the polymeric solution. McGall et al. also does not disclose or suggest use of a substrate without predetermined and/or premarked attachment sites for the chemical groups.

Claims 1 and 27 of the subject application are independent claims. Claim 1 is directed to a coating composition comprising microspheres in a fluid containing a gelling agent or precursor and a coating aid, wherein the gelling agent is capable of forming a gel after coating on a substrate. Claim 27 is directed to a microarray comprising a substrate coated with the composition as described with regard to claim 1. A rendering of Applicants' invention is attached hereto for the Examiner's reference. Neither Walt et al. nor McGall et al. discloses or suggests that a solution containing microspheres forms a gel. Walt et al. specifically discloses evaporation of the solution, or formation of a film from the solution, at p. 22, lines 10-16. Evaporation as performed by Walt et al. would lead to aggregation of the microspheres, as known to those skilled in the art, as opposed to the random immobilization of microspheres achieved by gelation as claimed by Applicants. McGall et al. discloses the use of polyvinyl alcohol and a coating agent, however, as shown by Applicants in Example 1, such a combination (formulation 2 - control) in and of itself does not form a gel. Thus, neither reference, alone or in combination, discloses or suggests coating of microspheres in a fluid that is capable of forming a gel, or a microarray comprising such a coating. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Claims 1-8, 12, 13, 24, and 27-34 were rejected under 35 U.S.C. §103(a) over Anderson et al. (U.S. Patent Publication No. 2002/0015952) in view of McGall et al. According to the Office Action, Anderson et al. discloses a coating composition comprising a gelling agent and microspheres wherein on gelling the microspheres become immobilized in the plane of coating and form a random pattern on the substrate. McGall et al. is cited as teaching a coating aid. For at least the following reasons, Applicants traverse the rejection.

Anderson et al. is directed to forming a coating of microspheres in discrete tubes or fibers. The tubes or fibers are then cross-sectioned, and the cross-

sections applied to a substrate. Applicants attach hereto a rendering of Anderson et al. for reference, and refer the Examiner to Fig. 4 of Anderson et al. Paragraphs 131-133 of Anderson et al., cited in the Office Action, clearly describe the formation and attachment of such cross-sections to a substrate, which substrate can be flexible or solid. The microspheres are not immobilized on the substrate as required by Claims 1 and 27 of the subject application, but within the tubes or fibers. Because Anderson et al. forms the microarray by attaching cross-sections of tubes or fibers to a substrate, the substrate of Anderson et al. has microwells formed *in situ* by the cross-sections of tubes or fibers, in contrast to Claims 2 and 43 of the subject application (compare the attached diagrams of Anderson et al. and Applicants' invention). Anderson et al. further does not preserve a random pattern of microspheres on the substrate upon gelation of the gelling agent as claimed by Applicants (claims 3 and 29) because gelation of the microspheres of Anderson et al. occurs in the tubes or fibers, which are then applied in cross-section to the substrate. Anderson et al. does not state that the microspheres are immobilized in random positions upon gelation, and only discusses orientation of the cross-sections of the tubes or fibers, for example, in paragraph 133. Anderson et al. also does not disclose or suggest thermal gelation of the gelling agent on a substrate in Table 1 or paragraph 112, contrary to the assertion in the Office Action. Anderson et al. discloses the use of epoxies and melamine that have a curing temperature of 40 degrees Celsius or greater in Table 1. However, these are not "gelling agents" according to the invention at page 5, lines 1-15. Further, the disclosure at Paragraph 112 of Anderson et al. refers to shrinking the fibers or chips to form microarrays from macro fibers or chips. Gelling of any materials in Anderson et al. is performed in the fiber or tube before cross-sectioning and placement on the substrate, as indicated in Paragraph 242 of Anderson et al. Thermal gelation of a gelling agent while on the substrate is not disclosed or suggested by Anderson et al.

McGall et al. does not overcome the deficiencies of Anderson et al. McGall et al. discloses compounds and methods for protecting chemical groups, and for forming compounds on an activated support. McGall et al. does not disclose or suggest gelation of a polymeric solution. McGall et al. also does not

disclose or suggest use of a substrate without predetermined and/or premarked attachment sites for the chemical groups.

Anderson et al. and McGall et al., alone or in combination, do not disclose or suggest at least microspheres immobilized on a substrate upon gelation of a gelling agent as required by Claims 1 and 27 of the subject application. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Claims 12-14 and 30 were rejected under 35 U.S.C. §103(a) over Walt et al. in view of McGall et al. as applied to Claims 1 and 27 above, and further in view of Anderson et al. Applicants traverse the rejection because, as discussed above, none of the references, alone or in combination, discloses or suggests microspheres immobilized on a substrate upon gelation of a gelling agent. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Claim 26 was rejected under 35 U.S.C. §103(a) over Walt et al. in view of McGall et al. as applied to Claims 1 and 27 above, and further in view of Chang et al. (U.S. Patent No. 4,873,102). For at least the following reasons, Applicants traverse the rejection.

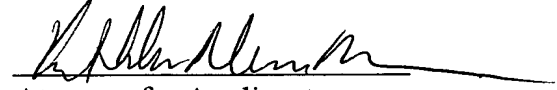
Walt et al. in view of McGall et al. is discussed above. Chang et al. is cited in the Office Action for a teaching of emulsion polymerization. However, Chang et al. does not overcome the deficiencies of Walt et al. or McGall et al. Specifically, none of the references, alone or in combination, discloses or suggests microspheres immobilized on a substrate upon gelation of a gelling agent. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

All of claims are believed to be patentable over the cited references for at least the reasons stated herein. Further action in the form of a Notice of Allowance is thus respectfully solicited.

Should the Examiner deem further action necessary in this case, Applicants respectfully request that the Examiner contact Applicants' representative to discuss this matter before issuance of any Office Action in order to further prosecution.

Should the Examiner require anything further, or have any questions, the Examiner is invited to contact Applicants undersigned representative.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Kathleen Neuner Manne', written over a horizontal line.

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Attachments:

Three (3) renderings by Applicants